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AMATEUR CINE WORLD

Incorporating "Miniature Camera World"

SPRING
MARCH, 1944—MAY, 1944
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GORDON S. MALTHOUSE, *Editor*

The Paradox of the Silent Film

AMATEUR films are so seldom noticed in the national press, that the recent publication of two newspaper reviews of the same amateur film is a matter of some moment.

It is, perhaps, inaccurate, however, to describe both of these notices as "reviews," for one of them, although remarkably long, is almost entirely devoted to a biography of Sterne, the subject of the film, "A Sentimental Journey." Possibly this retailing of biographical details is a measure of the critic's bewilderment, for she passes no comment whatever on the film.

The other notice, though less a criticism than a comment, is, like anything else that Miss Lejeune writes, compelling of attention.

Readers may recall in recent issues of "A.C.W." brief reports on the aims and progress of the Oxford University Film Society. Its eighteen-year-old president, Mr. Peter Brook, has signified his faith in the society's first major production by giving it a week's public screening at a bijou theatre in London. In the sense that it contains no dialogue, the film is a silent one, but there is a recorded commentary in Sterne's own words, spoken by the player who takes the part of Sterne, and synchronised music and sound effects.

We are less interested here in "A Sentimental Journey" as an example of amateur silent film technique than in the opinion of that technique advanced by a shrewd and responsible critic of the professional cinema. "It is an odd experience," she writes, "watching 'A Sentimental Journey.' It requires the patient cultivation of a mood of thirty years back, when all that flickered was a film. The modern screen approach, under old-fashioned screen conditions, is as paradoxical as the modern undergraduate in costume wig." Devastating criticism, this, of an amateur silent film if it suggests a reversion to 1914!

The "modern screen approach" one takes to be the technique now employed exclusively for sound films, and which differs from that of the silent film only in the relation of picture to sound: the mechanics of camerawork and editing are virtually the same in both. "Old fashioned screen conditions" is perhaps an oblique reference to lack of polish and a certain immaturity, but specifically, one infers, it refers to the absence of synchronised dialogue.

The paradox, therefore, seems to hinge largely on the lack of dialogue, but notice that its absence recalls to Miss Lejeune not the heyday of the silent film but the period when it had but recently grown out of the showman's tent and the nickleodeon. Thirty years ago "The Birth of a Nation" was only a year old.

This lack, it is safe to say, is not so noticeable in amateur documentary films, or so productive of atavistic tendencies in a critic, since dialogue is not the dominant feature of the professional model. But the entertainment film is still, unfortunately, largely composed of talk, so that a comparison with its amateur counterpart is bound to be odious.

If the silent amateur film play is to be something more important than a quaint survival, giving a slight nostalgic pleasure to those who remember silent films and, to those who do not, a curious emasculated affair minus a sound track, it must make use of a technique that does not invite comparison with the professional sound film through being virtually the same in its essential features.

The silent film play is to the talking one as ballet is to the theatre. One does not judge a ballet by the standards of the play; one does not complain that there is no talking in it. Rhythm, pattern, movement, colour, the interpretation of emotions by miming are the essence of ballet as they should be of the silent film that also seeks to tell a story.

In the old days of the silent film one could accept the photographed stage play because one had no other standards by which to judge it. But now there is a completely new, glittering, million dollar one that makes improvised shoe-string imitations of it look merely silly.

The silent film must not imitate; it must create within its own limits. A film treatment which appears to apologise for the absence of sound and which employs ingenious innovations to make that absence less glaringly obvious is barrenly imitative. We must have always in mind not that our films do not talk but that they do not have to talk, that the intrusion of the spoken word would shatter what should be an essay in a purely pictorial art.—THE EDITOR.

THE SUMMER ISSUE OF 'AMATEUR CINE WORLD' WILL BE ON SALE JUNE 1

"I Want . . . "

Readers Describe Their Ideal Cine Apparatus

SOUND QUALITY

I WAS most interested to read in the December number of *A.C.W.* the six contributions on Post War Amateur Cinematography. I was left wondering whether we should not realise that we are trying to cater for two entirely different types of enthusiast, (a) the person to whom money is very little object, and whose ideas are not cramped by financial considerations, and (b) the equally enthusiastic amateur whose ideas must keep pace with his pocket. I wondered, too, whether we were not "straining at a gnat and swallowing a camel." In my opinion two features of existing machines need to be much improved before many of the most interesting, but elaborate improvements mentioned by your contributors.

First, the lamp. The average user is appalled at the cost and short life of projector lamps, coupled with the dissipation of great heat and consequent ill-effect on film stock. This is a problem of vital importance, which should be number one priority. The development of the discharge lamp, colour corrected, would revolutionise projector design, for long life, light output and cool running would provide a long-sought relief.

The second problem is that of sound quality on 16mm. Sound quality has not kept pace with picture quality and it would appear that, using the present technique of sound printing, speed and sound optics, the limits of quality have almost been reached. How often are our shows ruined by the limitations imposed by present methods? I feel that 16mm. sound quality must be as impeccable as 35mm. This has, I believe, already been achieved in one experimental type of film (sample enclosed). This may or may not be the best solution, but some standard giving 35mm. quality should be agreed and incorporated in post war 16mm. apparatus, even if it means discarding the present S.M.P.E. standard.

As far as general projector design is concerned, this problem has been tackled by a specially constituted committee of the British Film Institute, insofar as it affects the use of film projectors in schools. We feel that the film has a vital part to play in post war education, and that projectors suitable for school purposes will be equally useful to the amateur cinematographer.

A series of proposals has been submitted to both British and American manufacturers, and the committee hope to meet representatives of the manufacturers to discuss the proposals in the near future. You will see that we do not intend to be forced into sound by the "talkie bombshell," because we are firmly convinced that both silent and sound films have their parts to play in education. In spite of the perfecting of sound apparatus there will always be a great number of amateurs who, for one reason or another, will stay with the silent film, and we should be failing in our duty if we did not insist that their demands should be met. I should be interested to see how far the proposals we have formulated meet the requirements of your readers.

BERNARD E. GILLETT,
Educational Director, British Film Institute.

Pointers to Perfect

Editor's Note.—Space does not permit of our publishing all of the proposals made in the excellent pamphlet, "The Design of Projectors for Educational Purposes," referred to by Mr. Gillett, but the following are among the more important of them.

Controls

Controls should be planned so that, as far as possible, they are brought to a control panel on the right hand side of the machine. Control knobs should be of distinctive shapes so that they may be distinguished by touch.

Input and output leads should be kept completely clear of the control panel, and in such a position that they are out of the operator's way.

Sequence interlocks should be provided to prevent operations being performed in such an order as to damage either film or machine.

Plugs should be so designed that it is impossible to insert them in any but the correct socket, they should also be designed so that tney are withdrawn by gripping the plug and not the wire. All plugs carrying high voltages should be so designed that it is not easy to make contact with live parts.

Running

Every effort should be made to reduce mechanical noise to an absolute minimum. It should be possible for the teacher to give a commentary or to hear the sound commentary from the loud-speaker without disturbance from machine noise.

Intermittent Drive

The intermittent drive should be so designed that film wear is reduced to a minimum, and on silent machines should be so constructed that films made on both silent and sound stock may be projected. This

In our last issue we invited readers to express their views on the anticipated or hoped-for developments in post-war cinematography described by six well-known contributors. The response has been quite remarkable. We thank all of our correspondents for their interesting letters, and regret we have space to publish only very few (and that without comment); but we have taken careful note of all and, after analysis and classification of the suggestions made, will pass on the more important to the appropriate quarters. In our next issue it is hoped to discuss points raised in this most revealing correspondence, with a brief commentary on the published letters.

Cutting from experimental film. (See letter from Mr. B. E. Gillett on opposite page.)

IDEAL 8mm. CAMERA

HERE are my requirements for an 8mm. instrument, not necessarily in order of importance.

Mechanism. Clockwork, with 25-30 seconds minimum motor run. Sprocket feed and take up, possibly with stop-pin action in the gate, as in the Keystone. Instant starting at correct speed.

Gate. Should have a positively-held small gap only slightly wider than the thickness of the film to prevent loss of loops if film is loaded in the camera for long periods and attains a permanent set at the loops. If the gate has an appreciable spring-loaded-travel with a light load and no limiting stop, the above permanent set will cause the gate to open and the claw to miss some perforations when the camera is started up after a long period of inactivity.

Miscellaneous. Single picture device. Frame counter. Film footage by thickness of film on spool measurement. Needs no setting and shows whether *film* is being consumed, not merely that motor is revolving. Back wind for limited footage only. Speeds 8, 16, 24, 48 and, if possible 64, but not important. A speed of 32 is sometimes provided but is of little use.

Turret for 3 lenses. All lenses to have standard thread so that a special lens may be retained and will fit any camera. Films and Kodak are inconvenient in this respect. There is a need for a true wide-angle lens ($\frac{1}{4}$" focal length) in 8mm. This is important if advantage is to be taken of the turret. Lenses must focus. Camera to be no bigger than required by 25ft. standard spools. Viewfinder to have parallax compensation (manual), and some device for at least $\frac{1}{4}$", $\frac{1}{2}$" and $1\frac{1}{2}$" lens fields. The Paillard fulfils most of the above, but its size and

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Projector Design

would obviate damage caused to sound tracks if films are inadvertently run through silent machines, and in their muted form would also make available for classroom purposes many of the excellent films available only on sound stock.

Inching Device

There should be an inching device, and if a screw is used for the purpose, it should give a visible indication of the position of the claw (if fitted) when threading. If a knob is used for the inching device it should be both accessible and large enough to be found and handled easily in the dark. The gear used in the inching device should not be so low as to make inching a tedious business.

Still Device

There should be a "still" picture device with coupled heat filter, so constructed that it is impossible to stop the film in the gate without the heat filter operating. The heat filter should be adequate to avoid damage to, or buckling of, the film when held in the still position for a period of minutes.

Light Output

The lamp and optical system should provide as much light as possible on the screen. Light output in lumens should be stated by the manufacturers and measured in accordance with British Standard Specification. There is some advantage in making the light output controllable and checked by a meter, preferably a voltmeter.

Transformer

If a mains transformer is necessary, it should be fitted with a circuit breaker and built into the machine. It should be remembered, however, that many areas still remain on Direct Current, some of which is not likely to be changed.

Rewind

A power rewind should be incorporated on all machines whether sound or silent.

Levelling and Tilting

Independent levelling and tilting devices should be incorporated in all machines. Tilting should be accomplished by a single control, and should be able to be done while films are being projected to allow for displacement of the picture by adjusting framing. The levelling device should be so constructed to enable the machine always to be in a stable position.

Trip Device

There should be a trip device, switching off motor and lamp, and operating automatically when loops are lost.

Accessibility

The whole of the optical system, comprising lens, condenser and mirror should be easily detachable for cleaning purposes, and should be fitted with a positive positioning device to enable them to be reassembled correctly. The lamp house should be so designed that a hot lamp may be removed without difficulty.

The gate, if of the opening variety, should open sufficiently wide to allow easy cleaning and inspection. If of the side-tension type sufficient space should be allowed between condenser and gate for this to be done.

Spools

Spools should be made of materials which will retain their shape and standardisation of the spool central driving holes is desirable.

Direction of rotation of feed and take-up spools should also be standardised so that films are not wound inside out.

weight are disadvantages for an 8mm. camera.

In conclusion, may I make a plea that writers be discouraged from speaking of so many *feet* of film (as in analyses and shooting-scripts), which is meaningless with three sizes in use. If *frames* or *time* are used there is no ambiguity to catch the inexperienced. Similarly, the frequent reference to "3"" lenses or 15mm. lenses is equally meaningless in terms of 8mm. film. "X3" telephoto, for example, would be more suitable.

YEOVIL, SOMERSET. D. P. EDKINS.

STEREOSCOPY

WITH Government control likely to go well into the early Peace years, I cannot foresee any *new* substandard outfits coming off the stocks perhaps for five years—or maybe a trickle at the end of three. By *new* outfits I mean those involving complete redesigning. Shall we not, therefore, be content with our known models with some modest improvements?

Getting down to earth, let's see what we really do want, coupled with what we could reasonably expect the manufacturers to oblige us with.

Exposure meter with auto-coupling to lens stop. I believe a practical example was commercially available in France pre-war.

Separate Sound Track. An old idea, the possibilities of which were, I think, explored by Pathe before 9.5mm. sound film appeared. In theory it's excellent, this separate sound track idea, but what happens when the visual film breaks? Just plain film splices into it to make up lost footage and then you're back again with the early talkies which had sound on disc.

Stereoscopy really is necessary in professional cinematography. Not so vital for amateurs except for sales stimulation, but it's a highly interesting subject at the present stage.

Stereoscopy is but an illusion of depth, and in whatever manner this can be achieved, will suffice. The projected picture must be stereoscopically visible from any part of the auditorium. That is probably why inventors are concentrating on the screen end—mistakenly so, in my opinion, although a different sort of screen undoubtedly will be necessary, but only as a part of the general scheme. Theoretically, I think an acceptable illusion of stereoscopics would result from either of the following:—

(a) The entire screen to revolve on a horizontal axis, the front of the screen containing narrow vertical prisms reflecting to the left, and on the back of the screen similar prisms reflecting to the right. The revolving movement would have to be sufficiently fast to provide momentarily a flat surface for each frame at the projector gate. While ordinary film would serve quite well, if alternate frames could be shot through left and right stereo lenses during taking the illusion during projection would be considerably increased. The only drawback I can see is that the vast wind created by the revolving screen would give all the audience double pneumonia in five minutes.

But if we could substitute for the screen a huge prism-faced cathode ray tube, with a light spot moving at hair-raising speed to control the prismatic reflection, coupled in turn to the projector, we might get what we are looking for!

(b) In place of the ordinary screen, substitute a fine muslin sheet, and at intervals of one foot behind it up to a depth of 16 feet, other muslin sheets of the same size. Each would have been treated to provide a peculiar reflective power according to the sharpness of the image projected upon it, in relation to its position in the set of screens. In turn, the film to be projected would, during taking and processing, have a system embodied to secure maximum reflection response from the various screens, according to the different degrees of focus appearing.

Studio props or make-up, according to position on the "set," would, by style, line, colour or other method, have a reflection value on a plane co-incident with that particular screen which would reflect them during projection. So that, on Screen 1 we have full sharpness of forefront image only. Behind, on Screen 2, not so good reflection for full sharpness, but good reflection response for those projected portions not so sharp (remember there would be co-ordination between "depth" of screen and the film during taking, as aforesaid). Screens behind No. 2 use the reflective powers peculiar only to each, and thus the stereoscopic illusion is built up. (We remember, also, that stereoscopics have no form of "roundness." The various planes are successively flat).

The above two ideas, if somewhat revolutionary, represent my angle on stereoscopic projection. Bearing in mind my earlier comment on postwar conditions, the practical completion of either system must wait.

If you are content with monochrome stereoscopy, there's no need to wait at all. The illusion can be obtained fairly well with an ordinary screen and ordinary film, although the printing of the latter is not ordinary. On the negative film being completed a "thin" or "wishy-washy" positive is made from it. This positive and the original negative are then printed together, but slightly out of lateral register, on to a final positive. The result is entrancing, and I can tell you that a "still" subject processed in this manner, almost jumps out at you from the print.

Films. Monochrome will still have its army of adherents, so best panchromatic, please; also colour films, grainless, and faster in speed.

Film Size. Since the advent of 35mm., circa 1896, commercial and amateur photographers have had practical experience of some seven different sizes—28mm., 9.5mm., 16mm., 17.5mm., 65mm., 70mm., and 8mm. Now, which shall curry the greatest favour from amateurs? Surely that which appeals to the pockets of the greatest number, so 8mm. and 9.5mm. must have prior consideration.

Personally, I feel that 8mm. is just a bit

(Continued on page 68)

"DO IT YOURSELF!"
practical ideas for the handyman

TOOTH BRUSH TITLES

In each issue our contributor supplies worth-while ideas: things to make and things to do. Suggestions for gadgets are welcomed.

By G. A. GAULD, B.Sc.

Fig. 2

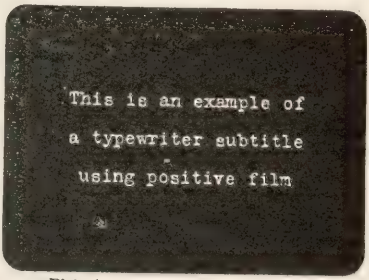


Fig. 1

MUCH has been written about titles and gadgets to make them; so much, indeed, that one is tempted to believe that titles are vital to the film. Actually this is far from the truth. Lead titles are, perhaps, a necessity, being the only means as yet devised for the introduction of a film, but subtitles disrupt the pictorial continuity and are to be avoided like the plague.

Having settled the essential wording of a subtitle, the amateur film editor should say to himself, "Now, can I say that in pictures?" If he can, the subtitle should be scrapped. There are times, however, when there is no alternative. If a subtitle must be used, then it must contribute to the narrative, never interrupt it. For this reason, "trick" titles should be confined to leads; they call attention to themselves for what they are and are quite unsuitable for subtitles. Subtitles should be unobtrusive; plain, straightforward lettering on a black ground, devoid of borders and other trimmings, being the most suitable form for the purpose.

In this respect, I think the plain typewriter subtitle has been grossly neglected. Most people have access to a typewriter even if they do not possess one and it is so easy to run off a set of cards or a continuous strip of subtitles. Matt surfaced paper should be used, devoid of "sheen" and a fairly new ribbon is an advantage. Alternatively, each letter may be given a double impression to make it black and clear. The subtitles should be short and a card about half the size of a postcard with three or four lines, double spaced and with ample side margins will make a satisfactory job. (Fig. 1.)

A simple titler can easily be made for the purpose, using a spectacle supplementary lens to bring down the focal length of the camera lens to suit. A special reel of positive film should be kept for the purpose of shooting these subtitles. With charger or magazine loading, it is easy to remove the exposed length, but the same can be done with an open reel in darkness. The camera can be set to run at a slow speed if there are lighting difficulties and the development of the positive film to a direct negative is a very simple matter using a small frame and an ordinary flat dish.

A white on black title will tend to cause a break in a colour film. This is to be avoided but there is no need to go to unnecessary expense and use colour film for the title. There are toners on the market in tablet form and tinting dyes are available from most dealers. Using the developing frame and flat dish, *tone* the black background to a suitable colour, wash, and *tint* the white lettering with one of the dyes. By suitable selection the two-colour subtitle can be made to blend unobtrusively with any colour film.

There is another alternative. By using

parchment type paper having a rough texture in the typewriter and developing to a direct positive, the light background only need be tinted to the desired colour, the letters remaining black. Either method will be infinitely cheaper than true colour film.

Many more liberties may be taken with lead titles and credits, but "trick" titles should not be employed just for their own sake; they should contribute to, and set the tone for, the subject matter which is to follow. Thus, for a brisk subject in fast rhythm, cuts, wipes, and general whirligigs may be used, whereas for a pastoral subject in slow tempo, slow fades or dissolves will be more suitable. It is always worth while making a good job of titles; they give the film a flying start. Due thought should be given to the form of the title and, when that has been decided, a good job made of it.

Background and ornamentation should always contribute to the theme of a film. Thus a film of odds and ends entitled "Reel Clippings" might take the form shown in Fig. 2, or a holiday film may make use of posters and travel brochures as a background. Do not add borders and frills for the sake of mere "prettiness."

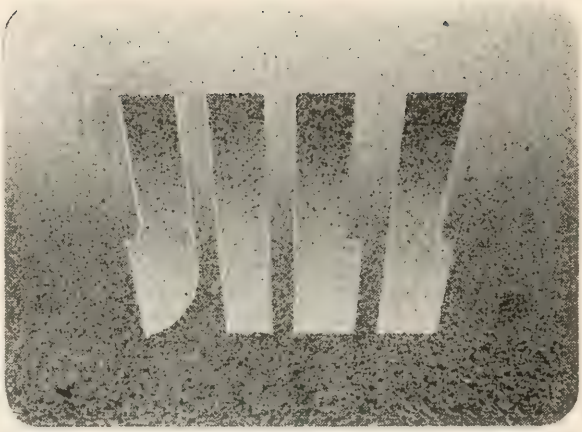


Fig. 3

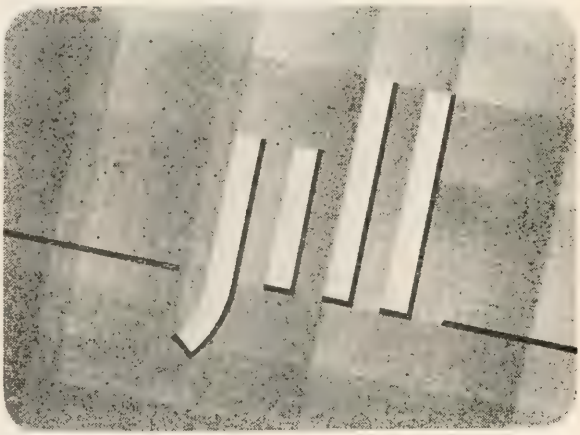


Fig. 4

Figs. 3, 4 and 5 are "toothbrush" titles, and the idea in this form may be new to some readers. A spray gun can be used but is rarely a piece of standard domestic equipment, whereas an old toothbrush is. Suitable stencils are cut and placed over a sheet of drawing paper. A quantity of black water colour is mixed up and the toothbrush charged. The paper is sprayed by drawing the toothbrush across the teeth of a comb held a few inches above the paper. Care

Fig. 5

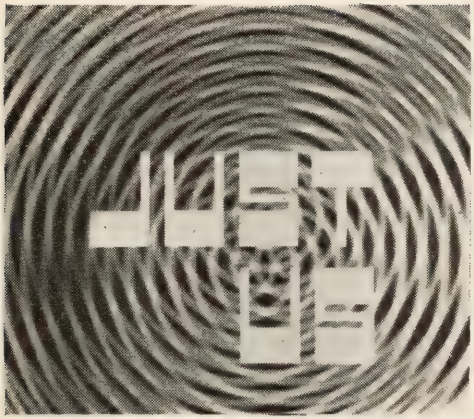


Fig. 8

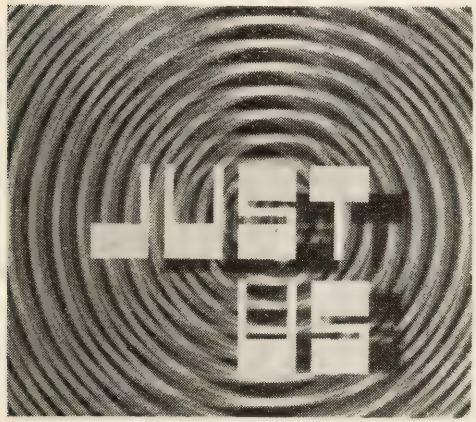


Fig. 9

must be taken not to get too much colour on the brush and to avoid the formation of "blobs" on the comb, otherwise a "blob" may be deposited on the paper with disastrous results. The paper should be dried between each application for the same reason, as the specks of colour will tend to run together and spoil the tone effect.

Do not forget the background "motive." Jill, Fig. 3, was an arresting sort of person; Jill, Fig. 4, was petite and vivacious. Fig. 5 is one of those "clever" titles which should be used with discretion!

There are several methods of securing fades. There is the use of the fading glass; decreasing the stop opening by closing the diaphragm provided the full exposure stop is large enough; or there is the method of using a dimmer on the lights illuminating the title.

Wipes are quite easy with titles. First, there is the "rollerblind" method, shown in Fig. 6. One title is set up at the back of the frame, remote from the camera. The other is printed on a long strip of paper, the upper end of which is attached to the top of the frame. The free end is looped round a heavy roller and brought up to the top of the frame as shown. After sufficient film has been exposed on the first title, it is drawn up to expose the second title behind. The method is not reversible, as it is difficult to lower down a second title into place and further title "blinds" cannot be used satisfactorily as the lens will not have sufficient depth of focus to cover the extra depth which would be needed.

Multiple wipes are secured more easily by the mirror method which has been described at length in the pages of this magazine. The set-up is shown in Fig. 7. The mirror is placed at an angle of 45 degrees to the camera axis and in the position shown, title "A" will be photographed. If the mirror is now drawn away in the direction of the arrow, it will appear to be wiped off and the second title "B" will take its place. The process is, of course, reversible and another title may be wiped in if the new title is fitted into place at "A" and the mirror pushed in to the original position. The technique is by no means confined to a vertical wipe; variations can be introduced by altering the sliding arrangements of the mirror. Incidentally, title "B" can quite easily be a "live" scene and a wipe to or from a title at "A" may be arranged.

By replacing the mirror with a sheet of plate glass, full dissolves are possible without the use of a camera windback. Unwanted reflections are cut out by draping the whole apparatus under a black cloth and the best results are obtained from cut out stencil titles illuminated from the rear. Two dimmers will be required. Full illumination is first applied to title "A" while "B" is completely black. The image of "A" will be reflected from the surface of the glass into the camera lens. If, now, the lights behind "A" are dimmed right out and at the same time the lights behind "B" brought up, the reflected image will fade out and "B" will take its place seen directly *through* the glass. The process is, of course, reversible. With suitable control of artificial lighting, a title at "A" can be faded out on a "live" subject at "B." Some experimenting is advisable in the first instance as the reflected and direct titles may require slightly different intensities of lighting, but the effect can be observed from the camera position first,

before any film is actually shot. This technique offers limitless possibilities in addition to pure title work, but we must keep to the subject in hand.

Titles on moving backgrounds are often very effective and two methods are available : glass and double exposure. In the former, the title is set up on a sheet of plate glass mounted in the title frame and the whole affair is directed on to the moving background. Unwanted reflections in the glass will have to be eliminated by black cloth screening and if outdoors, a shady background must be chosen. Inside, the relative illumination of title and background can be controlled. The double exposure method, if a little more troublesome, offers rather more scope. The titles should be planned and locations chosen

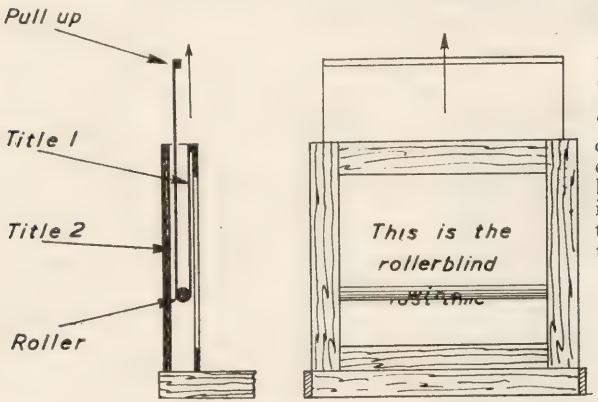


Fig. 6

which will bring the lettering into relatively dark portions of the background. The scenes can then be shot as convenient, the approximate footage being recorded and the exposures reduced to from one to two stops below normal. The film is then wound back in the darkroom and exposed a second time on the titles. These are best made up with white celluloid letters on a dead black ground made by stretching black velvet on a board. A full exposure should be given.

Some interesting effects can be obtained by a combination of glass and multiple exposures so long as the camera is not moved from its mount on the title board between them. Examples are given in Figs. 8 and 9. As such effects will tend to be of a "jazzy" nature, unusual lettering is permissible and the form should be such as to make the letters stand out clearly against the moving pattern. The letters are set up on the glass sheet and again, precautions are taken to avoid the unwanted reflections. In this case, a black and white spiral was drawn on a sheet of drawing paper and pivoted about its centre. The sheet was then spun round behind the glass plate during exposure on the title, but the secret of the design is that several separate exposures were made, the centre of the spiral being moved slightly each time. The sum of these exposures must, of course, total the full exposure required. Three positions were used in Fig. 8 and two in Fig. 9. In Fig. 8, the spiral was located about six inches behind the glass, giving a "soft" effect, while in Fig. 9, it was brought to a position immediately behind the glass. In this case, oblique lighting was used so that the letters of the title cast a shadow causing them to stand out. This effect is, I think, the better of the two.

There is really no limit to the possibilities of these and other methods, but I would again remind readers that "trick" titles can be overdone ; they should never be employed for their effect alone, but should be chosen to blend in with the film and contribute to its general tempo and theme.

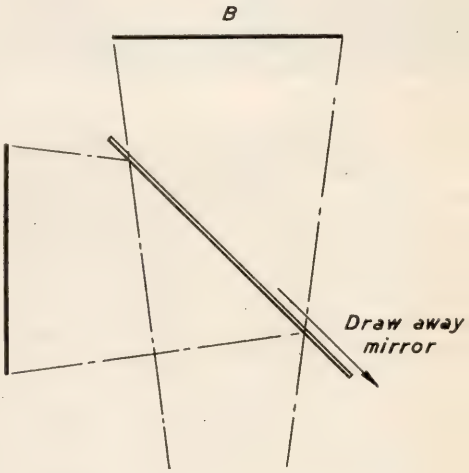


Fig. 7

The Chronicles of Grieshuus

A CRITICAL COMMENTARY BY H. A. V. BULLEID

FAMOUS LIBRARY FILMS No. 22

Production .. Union-Ufa, 1923.
Length .. About 8 reels.
Directed by .. Arthur von Gerlach.
Scenario .. Thea von Harbou.
Camera .. Fritz Arno Wagner.
Design .. Robert Herlth and Walter Röhrig.
Derivation .. Old country legend.
The Players—in order of appearance :—
Heinrich, *elder son of Grieshuus* Paul Hartmann
His servant .. .. Josef Peterhans
The Knight of Grieshuus Castle Arthur Kraussneck
Heiken, *his servant* .. Rudolf Rittner
Greta, *daughter of Heiken* Lil Dagover
Old Matten .. .. Gertrud Arnold
Detlev, *younger son of Grieshuus* Rudolf Forster
Countess Orlamunde .. Gertrud Welcker
Her servant .. .. HansPeterPeterhans
Rolf, *Heinrich's son* .. Bummerstädt

Sub-standard availability :—
3 S-reels, 9.5mm., equal to about three reels of standard size.
There is no trace of a 35mm. print ever having reached England.

THE 1919-1924 period of the German Cinema is chiefly remembered for films based on fantasy, legend, and saga. *Caligari*, *Dracula*, *Destiny*, *Siegfried*, *The Golem*, *Cinderella*, and *The Chronicles of Grieshuus* are all typical. In every case the outstanding production phases are the design and architecture, the "atmosphere," and the large-scale realization : the acting is fraught with a naturalistic charm, the direction is fairly profound, the scenario thoughtful and detailed. Humour is (excepting *Cinderella*) conspicuously absent ; and, what is more serious, the montage is so elementary as to be, in parts, obviously incorrect. The direction thus falls short of full technical cinematographic application, and therefore a slowness of narration and a tendency towards the theatrical keeps intruding, as was noted earlier in this series with *Caligari* and *Siegfried* : these defects are, however, offset by the compositional excellence of the photography.

The Chronicles of Grieshuus was shot at

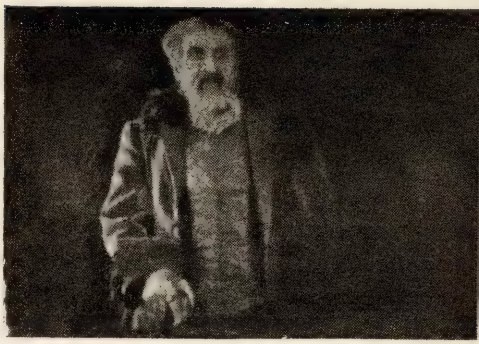
Heinrich, led by his dogs, rides out from the gates of Grieshuus Castle.

the same Neubabelsberg studios (near Berlin) and in the same year as *Siegfried* and *Cinderella*, and has the added connection of the same scenario-writer as the former, and the same leading man as the latter. The scenario is typical of Thea von Harbou's earlier work, and is made up of a series of episodes contained between fades. The construction is sound, but too elementary to be of great interest, a fault noticed in *Siegfried*. It was in *Metropolis* that this writer made a marked improvement, when the same logical development was maintained without the irritatingly episodic style—which is analogous to a book with too many and too short chapters. A more advanced construction is to be preferred, with more sustained sequences and a better *flow* of action rather than a succession of bits, as in *The Lighthouse by the Sea*.

The legend of Grieshuus Castle concerns the love of the elder son, Heinrich, for Greta, the daughter of an old servant, as a result of which the son is disinherited. The father dies of a seizure when the younger son, Detlev, begs the inheritance. Heinrich and Greta settle happily in a tower away from the deserted Castle. Detlev returns to seize the inheritance by suggesting that Heinrich's marriage has lowered him to a serf, and creates a terrible scene with Greta, who dies giving birth to a son. Heinrich avenges this by killing Detlev, then wanders away, an outcast. Years pass, and Detlev's widow plans to secure the castle by kidnapping the son and heir, Rolf: but Heinrich returns and Greta, appearing in ghostly form, leads him to rescue the child. And, though mortally wounded in the struggle with the kidnapper, Heinrich carries his son back to the castle, and so the rightful heir to Grieshuus is established.

The only unusual twist in this straightforward narrative is the appearance of Greta as a spirit towards the end, which provides an interesting solution to the dramatic situation and is fairly typical of such legends. The film presents the story without side-tracks, digressing only for characteristic incidentals. The players are impeccably excellent in appearance, deportment, and costume, and the acting is vigorous rather than subtle: standards in acting fluctuate, and at one melodramatic point Greta windmills ludicrously, just as did Sarah Bernhardt in *The Lady of the Camelias*.

Born in Java in 1894, Lil Dagover was one of the outstanding European actresses, though it must be remarked that she never showed really outstanding ability, being rather fortunate in her assignments. From *Caligari* through *Destiny*, *The Count of Monte Cristo*, *Mayerling*, *Tartuffe*, *Hungarian Rhapsody*,



Arthur Kraussneck as the old Knight.

The White Devil (with dubbed English dialogue), *Congress Dances*, to *La Barbarina* wherein she also sang with unexpected accomplishment, she is associated with some of Cinema's more interesting achievements. Her one trip to America for F.N. added nothing to her reputation, I last saw her at a Munich cinema in *Ein Frau die weisst wie sie will*, a mediocre affair typical of the hitlerized German cinema, which never reached England. The same depressing mediocrity marked Thea von Harbou's scenario for Emil Jannings's last film, *The Ironmaster;* which goes to prove that art is better served by inspiration than brute force.

Arthur von Gerlach is associated with one other famous film, *Vanina* (1922, with Paul Wegener, Paul Hartmann and Asta Nielson). He lacked the detailed control of F. W. Murnau and the stylish mannerisms of Fritz Lang, but handled his players carefully: good grouping is frequently in evidence, as in the crypt scene: and there are some nice "asides" such as the whisperings of the congregation as the final shot of the church sequence fades out.

The director was also very well served by his set-designers: Herlth and Röhrig are remembered equally for *Caligari*, *Tartuffe*, *Faust*, and *The Wonderful Lie*, all famous for the artistry of their sets—and *Grieshuus* contains some of their best work. One has only to recall the simple beauty of the church, Greta's room in Landes Tower, and the hall and stair of the castle, to realise how fine in conception and realisation are the settings of this legendary chronicle. The exteriors are equally memorable; both the purely natural and the designed exterior such as the Castle entrance.

All this excellent material and talent could, however, be wasted and yield only a mediocre

Love scene at Landes Tower. Paul Hartmann as Heinrich and Lil Dagover as Greta in "The Chronicles of Grieshuus."

Detlev and Orlamunde in the porch.

film, if the cameraman lacked inspiration and talent: but happily *The Chronicles of Grieshuus* was shot by perhaps the best of all cameramen—Fritz Arno Wagner. It is undoubtedly the quality of his work that sets this film among the "Classics." We have previously discussed excellent cameramen: Freund for *Metropolis* and *Vaudeville* and *Faust*, Krampf for *Cinderella*, and Hoffman for *Siegfried*: but no one of them has maintained the perfection with which all Fritz Arno Wagner's work has been endowed. Examples are needed to substantiate this sweeping statement: compare the full Close-ups in *Siegfried* with those in *Grieshuus*; the former are static portraits, the latter are alive with light and shade and subtlety of arrangement, so that the whole frame is filled with a living composition. Again, recall the expression of *mood* in the exteriors: gaiety, struggle, bleak despair are portrayed as required. For interiors, compare the (excellent) *Cinderella* shots in the Fairy Godmother's room with the (perfect) *Grieshuus* shots in the Knight's room with Detlev: the latter are decidedly superior in lighting and camera-angle.

This wizard cameraman was born in Thuringia in 1889 and worked as a secretary and a reporter in New York and Mexico before returning to Germany for the 1914 war. Through the German General Staff film section he went over to films in 1920 as a cameraman. Naturally, he worked on many famous films for many famous directors: *Warning Shadows* (Arthur Robison), *Dracula* (F. W. Murnau), *At the Edge of the World* (Karl Grune), *The Love of Jeanne Ney* (G. W. Pabst), *The Spy* (Fritz Lang), as well as the later *Kameradschaft* and *Testament of Dr. Mabuse*, form a redoubtable but incomplete list—and each was an exceptional photographic achievement.

The film opens with two tracking shots; the first tracks back to show the castle after a delayed iris-in of the crest carved over the main gate, the second tracks in through the gates into the vast courtyard. Heinrich is introduced in the Castle porch; his horse is led up and his servant brings his two huge dogs, who make a fine fuss of him. At a window above are the Knight of Grieshuus with his servant, Old Heiken. Heinrich rides off—seen from their view-point—and across the courtyard amidst scampering children and chickens, and out and away, in a fine long shot. One only regrets the shortness of the sequence, for the old castle is drenched with sunlight, the people and animals are pleasant to look at, and happiness and vitality abound. Fritz Arno Wagner has caught and maintained the joyous atmosphere.

Heinrich rides by a cottage nestling in a hollow: in a patterned Close-up, framed with sunflowers, Greta is introduced. Heinrich sits astride his horse, the wind blowing through him, a fine shot. Suddenly, over the hill, a band of vagabonds approaches the cottage: Greta sees, dashes inside, bars the door. The exterior long-shots have excellent counterpoint, but are too subtle to be appreciated at first viewing, perhaps due to pruning. The cottage interior is a grand conception of beams and leaded windows, through one of which Greta escapes as the door is battered in. The vagabonds give chase and catch her and bind her to a tree in the garden whilst setting about burning her property, but the row has excited Heinrich's dogs so he rides to the rescue, beats up the five vagabonds single-handed, and rather ingeniously puts them to flight by throwing a skep of bees after them. All this action is well handled in rollicking style, most unusual in a European film of the period. The cottage exteriors are fascinatingly perfect in all detail. The

Heinrich and Greta in the finely-carved stall in the old church.

vagabonds nurse their stings while Heinrich takes Greta to the Castle.

Washerwomen by a limpid brook fed from a little waterfall, men of the farm aloft haymaking, and the servants who swing open the massive entrance gates all stare curiously as the two ride in. The Knight of Grieshuus and old Heiken stand in the porch : Greta runs up to her embarrassed father, explains ; so Heiken stoops to kiss the young Lord's hand, but Heinrich hastily withdraws : and the old Knight, watching, realises the situation, gives permission for them to remain at Landes Tower . . . but Greta is not to meet Heinrich again. From the picturesque first three long shots this sequence is excellent both in direction and acting : the narrative situation and relationships of the characters are fairly complex, but clearly and economically stated. The use of supplementary lighting explains the remarkable depth and modelling of the photography.

" *My daughter isn't here,*" says Old Heiken to Heinrich who has (as we expected) called at Landes Tower (the Grieshuus crest is over the door). But Greta has heard from her room, where she is spinning, whilst the sun streams in throwing a dancing pattern on the wall from a swaying bough outside ; and she sings. Heinrich laughs, and climbs the old tree and appears at the window. The sparkling sunlight catches them both. . .

The Knight of Grieshuus paces his austere room, worried. He reads over his will, appointing Heinrich his heir. Heinrich enters, states his wish to marry Greta. The curt parchment, the long room, the carving and the cold stone, all fit in with the tradition of the old Knight : stormily he replies " *The daughter of a serf* ! *Have I not already refused my consent* ! " and tears the will in two.

In vast high-angle long-shot, in an open sedan chair borne by four servants, Detlev arrives and meets his father and brother in the porch. The hand-clasps are hesitant : Detlev is an outsider, a fact conveyed by the director without need of the explanatory title.

A short, fresh sequence of Greta with pigeons (reminiscent of *Cinderella*) and Heinrich with his dogs, culminates in their meeting in a happy embrace : but old Heiken is worried.

In the main hall of the Castle, a very beautiful set, Detlev announces his engagement to the Countess Orlamunde and asks his father's intentions regarding the estate : his Close-up is ideally arranged as he stoops crookedly forward to speak. The Knight rises slowly to his feet : Detlev straightens uneasily : in fiercely dramatic CM.S. with violently contrasted lighting the Knight refuses to appoint an heir, grasps a vessel of wine, but has a seizure and collapses : in low-angle M.S. he fills the foreground as Detlev shrinks back . . .Heinrich is at Landes Tower with Greta when his servant rides up with the news. . . The sombre death-bed scene is remarkable for its lighting : the key is low but the characters stand right out from the misty background.

A bell tolls. Six men carry the coffin. Heinrich and Greta lead the mourners, Detlev refuses a salute. The coffin is borne to the family crypt the priest reads the service. Detail shots show Heiken with Heinrich's servant, and Old Matten (the *chatelaine*, never properly introduced in the available version) in black, clasping her book. All kneel, in a lovely long shot from within the crypt, with the crowd filling the rising path outside and the picture framed with the sombre black of the interior. In mid shot the prayer is concluded. Too abruptly, and the title is ill-worded and ungrammatical, Heinrich asks " *Reverend Father, will you marry Greta and I ?* " C.S. Greta looks up, takes his hand : M.S. the priest blesses them, bows. Cut short to *End of Part One*. This is abbreviation run riot, and (apart from inserting a foot of blank film before the shattering appearance of the part tag) a slight lessening of the jar can be achieved in the musical accompaniment : throughout the funeral scene the Funeral March from the Otello Suite (HMV B.4274) is played, but starting at the above quoted title peals of bells (Columbia YB.8) are slowly faded-in on the second turn-table, *after* which the funeral march is slowly faded out.

A year later we find old Heiken playing with a newly-acquired cradle while Greta watches, smiling : the long-shot is charmingly framed by the trunk and bough of a spreading tree. Heinrich worries over the empty castle :

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Church scene, shot (k). Old Matten and Heiken. (Heinrich's servant in L. background).

Bedside scene, shots (e-g-i). Paul Hartmann and Lil Dagover.

Final scene, shot (s). Heinrich with his son, Rolf.

but Detlev covets the inheritance, and with Orlamunde, his wife (her Close-up expresses the cruelty behind her beauty), he drives up to the castle in his fine coach drawn by four thoroughbreds. Heinrich's servant refuses them admittance : a dramatic low angle shot covers the tense moment on the porch. Detlev considers : confers with Orlamunde : in full long-shot they return to their coach . . . *fade-out*

The Church sequence is one of the best in the film. In the opening bold long shot, the congregation lining the approach, a carriage stops on the hill in the foreground and Heinrich tenderly helps his wife to alight. They enter, shown deference by all, and inside climb the stair to the raised stall reserved for the use of the Knights of Grieshuus. Each of the several shots has some new detail of architecture or moulding or sculpture in the background. In another exterior long shot, giving a different angle on the church, Detlev and Orlamunde drive up. Inside, Heinrich and Greta kneel. The Priest turns to the congregation, a fine close-medium shot, two candles forming the background on the severely simple altar. Then. . .

(a)	L.S.	members of the congregation look round. . .
(b)	L.S.	(from altar) Detlev and Orlamunde enter,
(c)	M.S.	Detlev striding forward. . .
(d)	M.S.	Greta and Heinrich look round
(e)	CM.S.	Detlev exclaims to Heinrich, loudly,
(f)	TITLE	*" Do you forget that in marrying a servant's daughter you lose your rights as Knight ? "*
(g)	M.S.	Heinrich starts to his feet, handles sword, Greta restrains him.
(h)	M.S.	(as c and e) Detlev strides back, looks round,
(i)	L.S.	(high angle) members of congregation all look at him.
(j)	L.S.	(from entrance) Detlev and Orlamunde stride down the aisle.
(k)	CM.S.	Old Heiken and Matten look troubled.
(l)	L.S.	Heinrich desires the priest to continue.
(m)	CM.S.	Priest turns to his Book.
(n)	L.S.	(as j) Service resumes, but there are whisperings and noddings. *Fade-out*

It will be noted that the material is well arranged : but words cannot do justice to the beauty and authenticity of this church interior, which is seen from all angles : outstanding features are the balcony, seen in (b) and the absolutely characteristic shadows on the aisle in (j) and (n).

One evening, with Heinrich away from Landes Tower, Detlev intrudes on Greta and Old Matten. Greta's fingers move nervously : the C.S. of old Matten as she withdraws lingers on her hand slowly leaving a chair-back, an excellently expressive detail. Heavily-contrasted in lighting, Detlev in a sinister Close-up produces a parchment. . .

If a man of noble birth takes a serf to wife, he not only loses his rights as master, but becomes a serf himself.

A knotted vein in Detlev's forehead stands out with ugly ferocity, caught by strong side-lighting. He suggest she leaves Grieshuus. She screams, distraught. Old Heiken enters, begs mercy. The whole is lit with a sharp, angular intensity. Greta, with a wide gesture, indicates the door : Detlev slowly withdraws :

emotion overpowers Greta, she clutches her throat and collapses. In twilight long shot, Landes Tower in the distance, Detlev rides away. Heiken and Matten tend Greta, who is clearly (only too clearly by modern acting standards) upset. Then, frighteningly redundant and in large thick lettering, comes a placard :—

Detlev's words came as a terrible shock to Greta.

This title should be painlessly extracted. Matten looks out from the balcony : a lone rider is silhouetted on the horizon : she returns to Greta's bedside, while Heiken meets Heinrich, explains, takes his horse. Then. . .

(a) L.S. Heinrich enters. . .
(b) CM.S. stands in doorway, exclaims "*Barbe,*" runs forward. . .
(c) C.S. Greta, eyes shining, arms outstretched..
(d) M.S. the same, Heinrich passes old Matten, kneels by the bed. . .
(e) CM.S. The same, he speaks agitatedly to her
(f) TITLE "*You mustn't die, Greta. You know we will never be parted.*"
(g) CM.S. (as e) he says
(h) TITLE "*Nothing will ever make me renounce you.*"
(i) CM.S. (as g) she tries to restrain him, but he gets up,
(j) CM.S. speaks to old Matten,
(k) L.S. Tears himself away from her, she goes to Greta's side.
(l) L.S. (vertical pan) he hurries down the stair, pauses. . .

. . . because he sees the parchment Detlev brought. The cutting of this sequence is faulty, shots (c) and (d) being too long, so that the turbulent rhythm is lost. The action in (d)—(e) overlaps, proving that the technique of cutting on action was not understood. The single shot (e-g-i) is well arranged and acted, see still. (b) is interesting; Bärbe was the girl's name in the original and her re-christening as Greta is somebody's unaccountable whim. The titles are trite in content and idiom—a fault throughout the film.

Directed by his servant at the castle, Heinrich rides in pursuit of Detlev. Wind moans round Landes Tower. Greta's son is born.

Heinrich overtakes Detlev, produces the parchment, accuses him . . .

(a) CM.S. (low angle) slashes forward with his sword. . .
(b) L.S. Old Matten witnesses, in horror
(c) M.S. (low angle) Detlev's hands loosen, his legs slide from his horse, Heinrich leans tensely forward.
(d) M.S. (high angle) Detlev falls backwards on to rocky ledge. . .
(e) L.L. (low angle) (from behind) . . . end of fall, Heinrich on horse in background, slowly dismounts.

Heinrich slowly looks, then turns away in horror, and rides away into the distance. Old Matten struggles back through the wind to Landes Tower, and finds only the child alive. In a grim long shot with enormous depth of focus she shuffles to the stair, carrying the baby whilst through the door can be seen Greta : and in a lovely but eerie dark-fringed Close-up, the chill wind ruffles her still body and twisted autumn leaves drift on to the bed. In three cold long shots, buffeted by the gale, old Matten carries the child past the wind-swept shrubs and through the drifting leaves up to the castle : Detlev's horse stands guard over his body : Heinrich slowly rides away into the darkening twilight. *Fade-out.* (End of reel 2.)

Eight years later Heinrich chances to return to Grieshuus. Landes Tower is neglected, covered in creeper. He sits by the door, bowed with memories. Young Rolf (introduced with Old Matten by a roaring fire in the castle the previous night) plays with a toy cross-bow, an arrow lands by Heinrich : they meet, father recognises son ; and indeed the lad's resemblance to Greta is remarkable. Similarly Paul Hartmann, now with beard but not too aged in appearance, resembles his father : the make-up is excellent and the attention to detail exemplary.

That evening Heinrich seeks shelter in the inn, another magnificent set, grandly lit, and peopled with excellent types. Among the gossip it is learned that Widow Detlev is planning to wrest the Grieshuus estate from Rolf, the rightful heir. At this point the quality of the scenario improves ; continuous action is sustained to the end, and at one point three simultaneous scenes are intercut efficiently, though suspense values are lacking.

Orlamunde rides up to the castle with two servants, asks shelter, is admitted. Servants with torches light them across the courtyard, a superb full long-shot. Young Rolf watches from a window. Old Heiken bows her in ; she says to Rolf "*I hope we shall be good friends, nephew.*" Old Matten furiously insults her, is cynically ignored. At the village inn, Heinrich retires to bed. At the castle, Orlamunde and her servant watch as old Heiken takes Rolf to bed. Horses are in waiting by the river. Rolf is tucked in his huge, finely carved bed. Far down the stair, Orlamunde watches till Heiken leaves, then enters the bedroom. The dim-lit stair-head is handsome, flanked with intersecting arches, and with the Grieshuus crest on one wall. In long shot over Orlamunde's shoulder as she stands by the open door looking towards Rolf in bed, there fades the misty figure of Greta, as it were guarding her son. In C.S. Orlamunde, wide-eyed, recoils, retreats from the room, retreats down the stair : In CM.S. Rolf turns towards the spirit of his mother,

she smiles at him, and withdraws, and in mid shot fades again into the dim wall by the bed.

Orlamunde having returned empty-handed to the rendezvous beneath the wall of the castle, her servant goes to do the job. Greta then appears to Heinrich, leads him out to his horse : the servant seizes Rolf (this time the bedroom is shot from a low angle looking *towards* the door) : something rouses old Heiken : at the rendezvous, they start their getaway, prefaced by another unnecessary and ludicrously-worded title, "*Cross the river with all speed, then hurry.*" Fording the black waters of the river is excellently done in full long-shot.

Meanwhile, torch aloft, Heiken hurries down the stair, gives the alarm. Orlamunde, servants and Rolf have crossed the river : the long shot with them in foreground shows the castle bank in the background, fully establishing the geography. Dramatically, with lively movement across the screen, servants with torches stream out of the castle ; and in full long shot, some mounted, they sweep from the courtyard gate, the castle dimly discerned against the dark night sky.

Far across the heath Greta can be seen, a ghostly white figure, disappearing as Heinrich takes the right direction. The servant carrying Rolf sees his pursuer, turns, sets down the child : but Heinrich rides up. The encounter is staged on top of a cliff : in L.S. they grapple, in low angle M.S. Heinrich turns his head for a moment to look towards his son, and the servant plunges a dagger in his side, gets away. Heinrich staggers to Rolf in a magnificently composed picture : the white horse filling the right margin, Heinrich off-centre right, and Rolf low down in the centre foreground : all brightly white against the almost black of the heath and sky. The white horse follows as Heinrich slowly carries the boy back to Grieshuus castle, and Greta, preceding them, disappears for the last time as the great doors are swung open again. Heiken runs forward, torch aloft. . .

(a) CM.S. Faces his master and exclaims
(b) TITLE "*Heinrich ! Heinrich !*"
(c) CM.S. sinks out of the frame, to kneel at his feet.
(d) L.S. Other servants come up, all make way as he moves forward. . .
(e) L.S. (framed by two torch-bearers) he enters the castle.
(f) L.S. (through arch of door) he proceeds up the stair.
(g) L.S. (Old Matten in foreground) Door is opened by Heiken, Heinrich appears from stair and enters.
(h) CM.S. Old Matten moves forward.
(i) ML.S. Heinrich staggers, Heiken stands by him, Old Matten kneels at his feet.
(j) CM.S. He looks at Rolf in his arms.
(k) M.S. He sinks down in the old carved chair by the fire.
(l) CM.S. (Heiken stands near) He says
(m) TITLE "*How like Greta he is !*"
(n) CM.S. (as l) . . . and looks intently at his son. Heiken smiles.
(o) C.S. Heinrich looks at Rolf
(p) C.S. (over Heinrich's shoulder) Rolf puts a hand on his shoulder
(q) TITLE "*Daddy !*"
(r) C.S. (as p) and rests his head against his father.
(s) C.S. Heinrich fondles him, then his hands relax, his head sinks back.
(t) CM.S. A torch burning in a holder by an arch. It wavers, goes out, the shot darkens, smoke eddies away. *Slow fade-out.*

The tempo of this closing sequence is admirable. The greeting (a to d) is finely acted and quite emotional. The series of long shots (d to g) are finely photographed : the castle atmosphere pervades each composition, and the impression of the heir to Grieshuus returning to his own is excellently wrought. As the sequence becomes more intimate, there come the medium close-ups (h to n) : and finally we have full close-ups of Heinrich and Rolf, as the inheritance of Grieshuus passes from Father to Son . . . the torch fades, to be rekindled in the new heir. The two titles (m and q) are redundant; the second is thoroughly objectionable, and should be removed.

Von Gerlach indeed did well with his sustained atmosphere, carefully - drawn characters (e.g., Detlev and Orlamunde's attitude with servants), handling of crowd-scenes (mourners, servants, men in tavern), and arrangement of incidental material (e.g., sunshine, wind, night). All these may be the ingredients of a good script, but upon the generalship of the director depends the success of their realisation. Superior opportunities were not so well exploited, for example, in *The Lost World*. It is remarkable that this accomplished director made no further notable films.

The dying flame of the torch in the last shot is memorable : one can imagine a contemporary Hollywood version ending with Heinrich's spirit floating upwards and rejoining that of Greta on the battlements of the castle in a luscious embrace, accompanied by the glorious sound of an angelic chorus (cf. *All Quiet on the Western Front*). Definitely we must praise von Gerlach for his measured simplicity of treatment and dignified restraint, specially in the ghost scenes which might so easily have been ludicrous. His thoughtful direction supported by charming actors and sets, and crystallized in the lovely art of Fritz Arno Wagner, has added to the archives of Cinema this memorable legend.

MANUAL OF DIRECT DISC RECORDING

As we go to press we have received a copy of this useful handbook by Donald W. Aldous (Bernards (Publishers) Ltd., The Grampians, Western Gate, London, W.6. 2/-). A review will appear in our next issue.

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Secretary's Report

AS regular readers know, we have tried to supplement the information given in this series by means of "Notes"—technical treatises on various aspects of sub-standard sound, too long for publication in these pages, but available on free loan. Three of the most popular are: "Effective Presentation" by Jenkins & Bradley, "Sound Tracks and Their Faults" by Philip Jenkins, and "Sound-on-Film Recording" by Desmond Roe.

In addition to these notes of more general appeal, we have a few short reports by amateurs of their conversions. Projectors include Eumig III, Pathe 200B, Bolex DA, Western Electric (Originally for Disc sound), and also an original Dual-gauge Head design. Any of these may be borrowed by readers who send 4d. in stamps to cover postage, etc.

Although few samples have been reproduced in these pages recently, our postal Q. & A. activity is flourishing, and the T.I.D. Board will be happy to help you with your sound problem, if you provide a stamped envelope for their reply.

The business on hand concerns the removal of irregular movement at the scanning-point, otherwise known as filtering or smoothing. The first part deals with theoretical considerations, and analyses the more usual and satisfactory systems. This is followed by a description of the construction of a fluid-flywheel. (Any small discrepancies between the two parts must be ascribed to differences of opinion of the contributors!)

Film Drive Mechanisms

It may not always be realised that speed variations in a sound projector must be less than 0.2 per cent to be inaudible. Such precision cannot be obtained by the use of constant speed motors and high quality gears and sprockets alone, mechanical filters are needed as well.

Speed variations may be divided roughly into two classes, relatively slow variations or "wow" which gives an Hawaiian guitar effect, and more rapid fluctuations or flutter which causes harsh, muddy or wheezy sound. The main causes of wow, starting from the driving motor, are (a) overloaded motor (especially if synchronous), (b) badly adjusted electrical governor, (c) slipping belt drive, (d) eccentric gear or gears, (e) too tight or too loose bearings, (f) too thin oil in bearings, (g) eccentric sprocket, (h) jerking of take up reel, (i) variable friction in picture and/or sound gate due to buckled film or varying film humidity.

Most of these are due to mechanical inaccuracies or maladjustments and as such can be remedied. It is obvious that a cheap projector will not make a good conversion. The solution of (h), however, is to use an extra sprocket for the sound head, which is thus shielded from jerks of the take up. The use of a second sprocket has another advantage in that it can be driven directly from the motor by its own train of as few gears as possible. Only in this way can one be sure of eliminating all traces of projector intermittent motion from the sound head. Fig. 1 shows this principle. A single worm drive is best.

These are the reasons why this "driven" type of sound head is so strongly advised. Few projectors are fitted with sprockets of sufficient accuracy for sound, and as a new one has to be provided, the best use might well be made of it. Still, much labour is saved by making a direct substitution, and it is agreed that with a fluid flywheel, good, but not the best, sound can be obtained.

After all these sources of wow have been removed, we are still left with flutter due to (j) meshing of gears (inevitable unless expensive helical gears are used), (k) the picking of sprocket teeth in film perforations (also inevitable since film may shrink anything up to 5 per cent and so make perfect meshing impossible), and (l) traces of the intermittent motion getting through to the scanning point from the picture gate because of an incorrect film loop. (The film should always be bent through at least a right angle.) The results of (j) and (k) can only be removed by means of a mechanical filter.

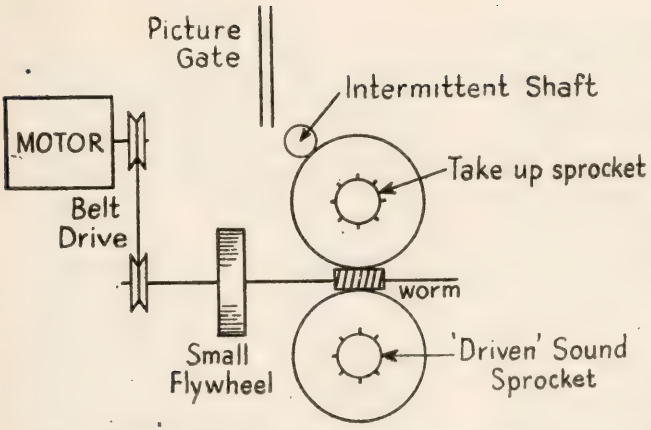

Fig. 1. Elements of the mechanism of a good sound projector.

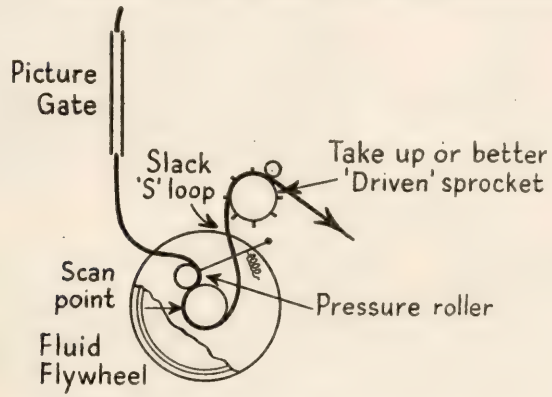

Fig. 2. Typical lay-out of Fluid Flywheel Sound Head.

The kind of filter used consists of three parts. First a flywheel which by virtue of its inertia tends to rotate at a constant speed ; second an elastic link between the flywheel and its drive so that the irregularities may be absorbed yet the flywheel kept up to speed ; and third, and very important, a means of preventing the flywheel from oscillating about its steady rotation (much in the same way as a weight hung on a spring at the end of a rope would oscillate if the rope were drawn up at all unevenly). Such oscillations (called "hunting") may be prevented by getting rid of the additional energy necessary to produce them. Energy of motion can only be dissipated in a pure resistance, where it appears as heat. The internal friction or viscosity of a liquid offers such a resistance, hence the use of oil as a damping medium. The effect of a powerful magnet on a rotating copper disc is also suitable. Ordinary rubbing friction is not satisfactory for damping in a high quality filter. It is too variable, being very high between two bodies at rest, falling rapidly as one body moves and then slowly rising again with increasing speed. Viscous friction is directly proportional to speed.

Coupled with the reason of high wear on the film we now see why flat sound gates are to be avoided. If a gate must be used, a curved, polished, single sided one is best.

To scan the sound track then, it becomes necessary to wrap the film round a drum which must revolve easily. It is an obvious step to connect this drum to a flywheel. Of our filter, then, we have the flywheel, and as an elastic link the loop of film to the sprocket may be used. But what of the damping?

The application of damping is *the* problem in mechanical filter design. Only a few acceptable solutions have been found. The obvious method of running the flywheel in a bath of oil is not satisfactory since it also imparts a steady drag to the flywheel. This tightens up the film loop, which thereby loses its elasticity, and the filtering action is reduced alarmingly. The answer to this problem is to rotate the bath of oil by means of an auxiliary drive. A large flywheel is attached to the oil container so that the damping forces, acting through the viscous coupling, have something against which to react. This works very well, and, using the equivalent arrangement of a magnet and copper disc instead of oil, a film recorder has been devised which is used in many studios. But for general use the auxiliary drive is an added complication.

This problem has been solved rather neatly by the invention of the Fluid Flywheel or Rotary Stabiliser. (Fig. 2) Here the scanning drum flywheel takes the form of a hollow casing, which contains a heavy flywheel

running on ball bearings. Oil fills the narrow space between the two. No auxiliary drive is required, the inner flywheel being brought up to speed by viscous forces alone. When up to speed, any relative motion between it and the casing brings the viscous forces into play again. Oscillations are thus damped out. The inertia of the casing must not be too large, as the more energy stored the more has to be dissipated. It has usually about one eighth the inertia of the inner flywheel. The overall size of a fluid flywheel can be larger than that of a plain flywheel used for the same purpose since the slip in the oil layer means that the starting strain on film perforations, etc., is reduced.

The whole stabiliser runs on ball bearings so that the loop of film driving it is under low tension. This means good filtering. For the same reason, the roller pressing the film into contact with the scanning drum should also run on low friction bearings.

This type of Fluid Flywheel has one slight disadvantage. The residual rubbing friction in the internal ball bearing occasionally causes casing and flywheel to lock together. Then hunting at the low frequency of the combination occurs until sufficient acceleration is imparted to the casing to break the bond. To overcome this a type of fluid flywheel in which the inner flywheel is replaced entirely by liquid has been evolved. Viscous resistance is obtained by causing the oil to flow through several perforated radial plates. To obtain the same inertia the whole assembly has to be much larger, although mercury might be used instead of oil to keep the size down. For sound projector use, however, the first fluid flywheel is perfectly satisfactory and is strongly recommended.

There is another approach to the filter problem which is of interest. So far the irregularities of the sprocket have been transferred to the film and had to be removed on their way to the scanning point. It is quite possible to mount the sprocket elastically on its shaft so that the variations never reach the film. Fig. 3 shows the idea. The film runs over a scanning drum connected to a plain flywheel. The spring roller creates a tension which holds the film tightly to the drum. The flywheel and film tend to move together uniformly. Any irregularities in shaft rotation are absorbed in the light springs between shaft and sprocket. Tooth pick results in motion of the sprocket—not the film. Damping is applied between sprocket and shaft by means of an oil soaked felt pad, or better, by using instead of springs, strips of polyvinyl chloride which is often used nowadays as a covering for flexible electric cables.

This substance is elastic but has good self damping properties. The use of a plain

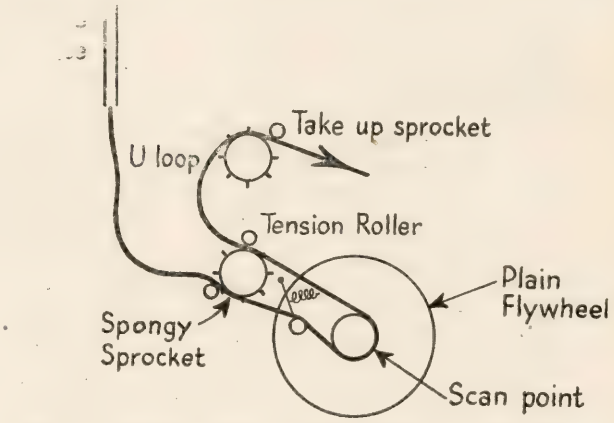

Fig. 3. Lay-out of spring sprocket 'driven' sound head.

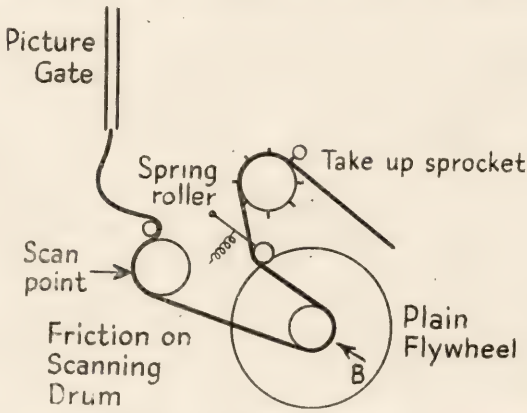

Fig. 4. Lay-out of sound head using rubbing friction for damping. (B—Alternative scanning point.)

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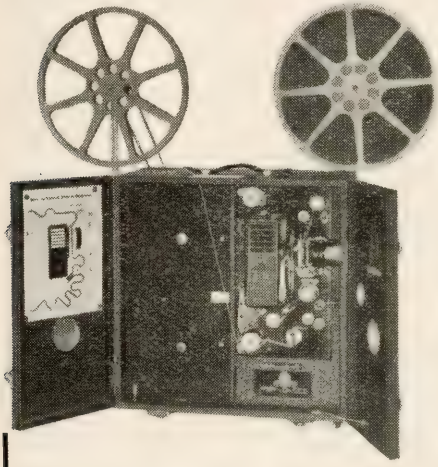

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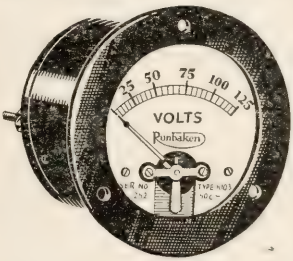

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flywheel commends the filter, but for best results a special sprocket is required, though again for amateur use a good sound sprocket should suffice. Ball bearings are used for the flywheel shaft.

There is one type of filter using rubbing friction which can be made to work fairly well, and may be easier to construct. Fig. 4 shows the layout. Rubbing friction is applied to the scanning drum by spring loading it against a fibre washer. The drag produced means that the elasticity of the film loop has to be augmented by a spring roller. This has to be as light as possible to avoid disturbance of the filtering action. The elasticity of this roller has to be carefully matched by trial to the friction to make the filter work properly.

Finally, it should be pointed out that the belt drive, flywheel and general frictional load of a projector form a filter as described. The filtering action is very useful to smooth out the inevitable fluctuations in an electrically governed motor. The flywheel should, of course, be on the projector, not the motor. (Fig. 1) The flywheel also retards the starting rate and so lessens the strain on gears, film, etc.

A few details

In laying out a soundhead remember to get a good wrap of film round scanning drum and sprocket. Elastic film loops may be S or U shaped (Figs. 2 and 3). Any part of a loop pulled straight under running conditions is a passenger as regards elasticity. It does no harm but may be removed to give a neater layout. Flywheels, especially fluid flywheels, require careful balancing. It is often advantageous to mount a fluid flywheel, optical system and photocell on a separate rubber mounted plate in order to get rid of vibration.

Lastly, here are a few useful figures. The inertia of a flywheel of simple disc shape is ktr^4 oz.ins^2, where r=radius in inches, t=thickness in inches, and k is 7.3 for brass or steel, and 10 for lead. It has been found that an inertia of 150 oz.ins^2 is a good figure for use with a 1in. scanning-drum, and 16mm. film. This is provided by a steel or brass flywheel of $4\frac{1}{4}$" x 1"—a size already given in T.I.D. The scanning-drum should not be less than $\frac{3}{4}$" diameter, if sufficient frictional contact with the film is to be obtained, and if other than 1", the flywheel inertia must be altered proportionately. (Note that doubling the diameter of the flywheel gives 16 times the inertia.) 9.5 film, being narrow and thus more elastic than 16mm, will require about $\frac{2}{3}$ of the inertia.

For fluid flywheel the figures are much less definite, since so much depends upon the associated mechanism, but in general the combined inertia of the two parts is a little more than for rigid flywheels. (The inertia of the shell alone, although relatively small, is rendered more effective by the greatly improved damping of the irregularities.)

FLUID FLYWHEEL

Revolving scanning drum, controlled by a fluid flywheel, is capable of producing smoother and clearer sound than any other system so far employed in substandard projectors. It eliminates entirely the effects of sprocket-pick, and may even render harmless slight imperfections in the film drive, such as gear irregularity or backlash effects. In addition, it is particularly easy on the film. But this does not imply that perfect performance is automatically ensured by the use of a "rotary stabiliser," as the flywheel is officially termed. Indeed, the standard of workmanship in some details must be really high, and the associated mechanism finely adjusted, if the full benefits are to be realised. The specimen described below, although crude in many respects, and considerably modified by the shortage of certain materials, has proved itself capable of an excellent performance.

A preliminary review of available tools and materials showed that the maximum diameter which could be conveniently handled was about $4\frac{1}{4}$", that even if an aluminium casting could be obtained for the outer drum, it would make for several complications in design, and that new ball-bearings were not available for such experiments! Sheet tinplate was used for the drum, type-metal for the flywheel proper, and a selection of small ball-bearings in good condition was obtained from the "innards" of various oddments in the local scrap-yard. (In fortunate cases one might be able to obtain new bearings from the stock of a garage or model engineer.)

For efficient working the moment of inertia of the inner flywheel must be about eight times that of the outer drum. In professional practice the clearance between the two—around the periphery—is in the region of 8 mils (.008"), and a light oil is used for filling the drum. Realising the probable irregularities of tinplate construction, it was decided to use a considerably wider gap, and to compensate for this by using a more viscous oil. A preliminary test indicated that although a gap of 1/32" would give clearance, it might be safer to allow a little more, and the figure of 1mm. (1/25") all round was used.

The size of the flywheel was more or less arbitrarily decided upon as $4\frac{1}{8}$" x $\frac{3}{4}$", and using a tin lid as mould (lined with cardboard

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to give the required depth) was cast from about 4 lbs. of type-metal. After turning and boring the disc into shape, the bearing was fixed in place by means of numerous centre-punch "dints" in the metal surrounding the race on the "open" side. After carefully checking the balance and truth of the assembly the flywheel was weighed and found to be almost exactly 3½ lbs. After a rough preliminary calculation, two discs were cut from 18 gauge tinplate, and just over 4¼" in diameter, also a strip of 24 gauge tinplate 14" x ⅞". These together weighed just over 6½ ounces. Considering that the periphery of the drum was of lighter metal than the faces, it was estimated that this weight would give an inertia on the right side of the 8:1 ratio.

The discs were then carefully flattened, trued up in the lathe, and a small groove

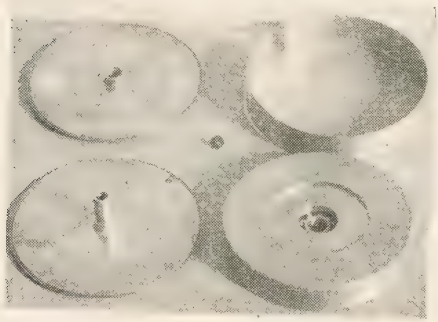

Fig. 5

turned close to the circumference to locate the periphery. (See diagram and Fig. 5) In the same operation the central holes for the boss-parts were bored out. (The discs were held in the lathe by means of a short length of 2" diameter brass tubing, sweated on to the rear surface with soft solder. The sweating-on and removal were carried out by the heat of a gas-ring, turned low so as to provide even heating, and avoid distortion.) In one disc a filling-hole was tapped ¼" x 26 tpi, close against the groove. (A 40 tpi thread would have been better.)

The boss-parts were turned from ¾" brass rod, and sweated into the discs. (Again, all steps of boring, turning and threading were performed in one setting, to ensure concentricity.) The strip of metal for the periphery was carefully trimmed, to give the required separation of the faces, and checked for truth with a metal straight-edge. High-spots were filed down, and the width checked to ensure that the sides were parallel. The strip was then wrapped around a piece of 3" tubing, which produced a smooth curve of almost exactly the required diameter. A trial assembly indicated the length required, and the strip was cut accordingly.

The parts were now ready for final assembly and soldering. As precautions, all the grease was washed out of the bearing with petrol, along with any grit and filings, and just before soldering, the whole assembly was "waggled" in all directions, to make quite sure that the flywheel could not come in contact with the drum.

The soldering was done with an electric bolt of medium size, using the barest quantity of Baker's Mixture as flux. The two faces, being screwed together at the boss, held the periphery in place laterally, while a loop of wire passed around and twisted tight, kept it "closed." The butting ends were placed diametrically opposite to the filler-hole, and after a respectably smooth and even film of solder had been obtained around both sides, the wire was removed and the joint sealed with solder.

For a first trial, the drum was filled with motor-oil ("XL") with the aid of a pen-filler. This oil gave quite a good performance to begin with, but as it was warmed up by the heat of the projector, its viscosity dropped to an excessively low value. After some experimenting, castor oil was considered likely to suit, as it retains good viscosity even when hot. But the difficulty of introducing the much more viscous oil became immediately apparent. Eventually, a small filler-funnel was roughly constructed, with the stem threaded to fit the hole. This was

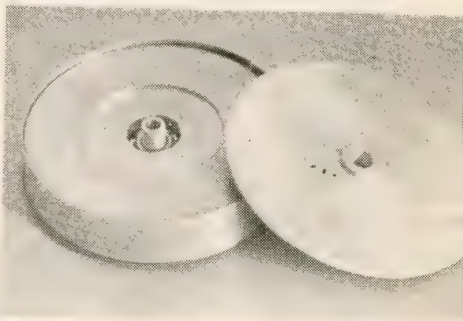

Fig. 6

filled with the castor-oil, and then the drum immersed in very hot water. The flywheel was handled by means of a "hairpin" of wire, the ends passed through and opened out below the boss, and was tilted so as to keep the filler high, and, of course, above the water! The air bubbled out through the oil for a few seconds, and then the drum was

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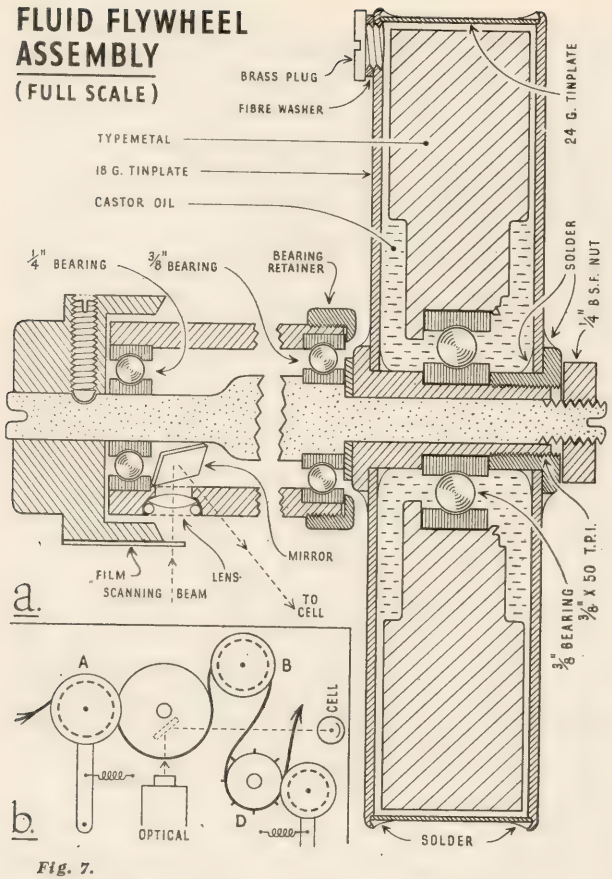

Fig. 7.

transferred to cold water. The contained air contracted and drew in the oil with satisfying promptness. This process was repeated, with additions of oil as required, until no more air was driven out. The plug was screwed in, the whole thing again "waggled" and rotated, and then left for a time with the filler-hole uppermost. This collected the residual bubbles, and the "H. & C." process was repeated to finish the filling.

The complete flywheel was then tested for balance by placing it, with a piece of ¼" steel rod for axle, on two horizontal "knife edges." The weight of the filler-plug (made of ebonite, and shown in Fig. 5) was found not sufficient to balance the blob of solder on the periphery-joint. A new plug was made, this time of brass, with a thin fibre-washer, and its head filed down until exact balance was obtained.

The careful balancing of both parts of the flywheel is essential, as is absolute concentricity of shaft, bearing, flywheel and drum. (Errors which might go undetected in a rigid-flywheel, friction-damped system are shown up glaringly in the "unrestrained" assembly.) Similarly, the bearings must be absolutely free from tight-spots or distortion. Ball-bearings are essential both at the scanning-drum and the flywheel end of the shaft.

In this case, the shaft was made from $\frac{7}{16}$" cast steel (in lieu of the more desirable silver-steel) and was turned "between centres," to ensure absolute alignment and concentricity of all finished surfaces. The scanning-drum, which had previously been turned roughly, but accurately bored, was slipped on to the shaft and fixed with the grub screw. Then with the shaft rotating in the lathe, the drum was finished. This ensured concentricity and truth.

The support for the entire assembly consisted virtually of a tube 1" outside, and slightly under ¾" inside. In this, seatings were turned for the two bearings. The ¼" one was a firm press-fit, while the ⅜" one was an easy fit, held in place by a threaded ring. This bearing serves to maintain lateral alignment of the system. A "window" cut in the tube close against the scanning-drum bearing allows the beam to strike a small mirror, and to be reflected out through a second window, clear of the edge of the film, into the photocell.

The actual film-path used in this scanner is shown in the small sketch. (Fig. 7b). The roller A is flanged, and acts as guide. It is carried on a lightly-sprung arm, and runs freely on a small ($\frac{3}{16}$") axle. After passing round the scanning-drum, the film is carried over another flanged roller, B, about ¾" diameter, which produces an "elastic loop"—an essential part of the system. This roller also is very free-running, and is followed by the driving-sprocket, D. There are, of course, many ways of producing an elastic loop, but it is desirable to avoid any appreciable length of "straight" film between scanning and drive points, as this serves no useful purpose, and may increase the

(*Continued on page 68*)

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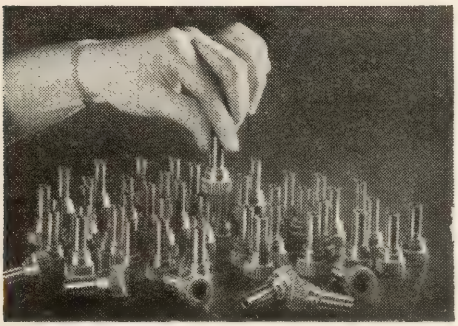

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WANTED All goods below are urgently needed.
Pathe 17.5 Talkie and Films. Pathe Vox. Pathe 200B or Plus. "S" Lamps. 110 volt, 200 watt Lamps for 200B, and any quantity 9.5 S.B. Films. Would consider purchase of Library. Full particulars and prices to:
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TALKIE PROJECTOR 16mm., 1,600 ft. arms, 750w lighting, also splicer and rewinder, wanted at once for the purpose of Forces entertainment. (Not for resale). Good price paid for really good machine.
H. H. THOMPSON,
82, Walsall Road, Aldridge, Staffs.
Phone: Ald. 52120.

"I WANT . . ." (*Continued from page 44*)

too small. The magnification for even a small screen shows grain painfully, at least on those examples I have witnessed. The handling of this size requires some microscopic accuracy, too. Therefore, I would cast for 9.5mm., a small film with a large picture area.

We can doubtless expect a more rectangular sound picture in future, and improvements in transit mechanism to obviate entirely wear on the film. And interesting advances in sound reproduction can be anticipated.

I cannot see 9.5mm. film superseded either by 8mm. (microscopic propensities) or 16mm. (relative expensiveness). I seem to have seen 9.5mm. film belittled in print before, but why, goodness only knows. On results it is the more economical and inexpensive stock relatively available. I think the sponsors of this size, pioneers of amateur substandard cinematography (1912) can be relied on to "deliver the goods."

Projector Lighting. At least 500 watts, incandescent cold light and lamps no longer to bear fancy prices as they did pre-war (and still do).

Film Reel Capacity. Sufficiently large to take all the spools of a feature (say, 2,500 feet).

Cooling fans that really will cool a hot lamp and the condensor and the gate.

These are the things the manufacturers might reasonably be expected to offer with very little delay, when the time comes for them once again to minister to our needs.

LONDON, S.E.9. W. W. WILES.

TRACKING IT DOWN (*Contd. from page 66*)

scanning and drive points, as this serves no useful purpose, and may increase the wowing effects of shrunk film and splices.

Although the flywheel is in the present instance shown firmly bolted to the shaft, it may be found that a friction clutch, adjusted to slip only under the high torque of starting, is desirable with some projectors which reach running speed rather violently. Also, although the assembly shown is for 16mm. film, the general construction would be equally applicable to 9.5. In this case, the scanning-drum would be only 7.5mm. wide, and, of course, with the scanning-beam, etc., "outside." This would enable a slightly smaller scanning-drum to be used, which in turn would permit a smaller flywheel to provide sufficient smoothing.

The cine processing firm of Todd's, Errol, whose announcements have appeared in these columns for several years, will in future be known as Microfilms, Limited. The company is to extend its services to include the industrial use of cine both for pictorial work and micro-copying. They remain under the personal direction of Mr. J. Clifford Todd.

AMPRO
16mm. Complete Talkie Projector
750 watt Lamp—Amplifier 15 watts
Offered in exchange for 16mm. Silent Films
FRANK E. JESSOP, The Leicester Dealer
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16mm. Sound Film Library
Features, Comedies, Drama and Technicolor Interest. Latest releases at attractive hire rates. 2½d. stamp for list mentioning make of projector.
H. G. THOMAS,
Sub-standard Film Service,
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LONDON, N.13. *Tel. : Pal. Gr.* 6828/9

LATEST 9.5mm. RELEASES for SALE (from Stock)

El Alamein to Tunis ...	3 reels	300 ft	£3 7 4 per reel
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Conquest of Sicily ...	2 „	300 ft.	£3 7 4 per reel
Dunkirk	1 „	300 ft.	£3 7 4
Carrier X	1 „	200 ft.	£2 2 1

60ft Reels

Advance of the Red Army	12 8
Malta Receives its George Cross	12 8
U Boat Pack Returns to Port	12 8
Pearl Harbour	12 8

SMALL PLANO CONVEX CONDENSERS

32 x 15mm.	9d. each
24 x 9mm.	6d. each

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36 x 27 Beaded Roller with Side Stretchers	£3 7 6
36 x 27 Silver Roller with Side Stretchers	£1 1 0
40 x 30 Beaded Roller with Side Stretchers	£2 12 6
40 x 30 Silver Celfix (Secondhand) ...	£3 17 6
40 x 30 Self Recta Glass Beaded Table Model	£5 7 6
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46 x 36 Silver Roller with Side Stretchers	£2 2 0
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Special sizes quoted for Film Container Cans. Details on application.

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The Substandard Film Review. Illustrated supplement to the film catalogues. Price 3d. post free. Four issues as published 1/- post free. Nos. 1 and 2 available immediately.
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Wanted. Splicers of all types. Your price for splicers in really good condition. 8mm. films for projection. Any lengths including multiple reel features. State price.
For Sale Cine Kodak "K" Camera. 16mm. f/1.9 interchangeable lens. 100ft. capacity, slow speed, case, as new, **£45** (list over £57).
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Pathescope 200B plus. 9.5/16mm. In new condition. *Part Exchange only.*

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Hire rates for 9.5 silent films.

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BEST PRICES PAID.
Works Engineer,
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For Sale G.B. model B SMPE projector. Completely overhauled by G.B. 800ft. twin speakers £175. Box 672.

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Wanted 16mm. sound films and projector. Bell Howell or Sprocketless (S.P.). Box 668.

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